GROMAKOV, S.D.

USSR

Several rules for the plotting of phase diagrams of binary systems. S. D. Gromakov and L. M. Gromakova (State Univ., Kazan). Zhur. Fiz. Khim. 17, 1515-23(1943); cf. C.A. 40, 6170h.—In order to demonstrate the validity of the rules suggested previously (*loc. cit.*) for drawing phase diagrams of binary systems, the solidus and liquidus temps. were measured, as functions of the mole fraction of one component (from 0 to 100%), of the systems LiCl-KCl, LiCl-NaCl, RbBr-KBr, RbBr-NaBr, LiBr-RbBr, $CaCl_2$-$BaCl_2$, $Sr(NO_3)_2$-$SrCl_2$, $LiNO_3$-$Sr(NO_3)_2$, $NaNO_3$-$Sr(NO_3)_2$, and KNO_3-$Sr(NO_3)_2$. Data are tabulated.

J. W. Lowcberg, Jr.

GROMAKOV, S. D.

USSR/ Chemistry Physical chemistry

Card : 1/1 Pub. 147 - 12/25

Authors : Gromakov, S. D.

Title : Methods of calculating the properties of ternary systems on the basis of data for binary systems

Periodical : Zhur. fiz. khim. 28/7, 1257 - 1265, July 1954

Abstract : Methods for the calculation of the liquidus surface and other properties of ternary reciprocal-systems, according to experimental data for binary systems, are described. These methods are based on quantitative expression of the continuity principle. Equations, which can be used for the determination of the chemical reaction between the components of ternary systems, were introduced. Six USSR references (1931 - 1948). Graphs; diagrams.

Institution : State University, Kazan

Submitted : October 27, 1953

GROMAKOV, S.D.; GROMAKOVA, L.M.

Treatment of the liquidus of binary systems. Zhur.fiz.khim. 29 no.4: 745-749 Ap '55. (MLRA 8:8)

1. Kazanskiy gosudarstvennyy universitet im. Chernyshevskogo.
(Phase rule and equilibrium) (Chlorides)

GROMAKOV, S. D.

3
4E4
4E32

Surface tension and liquidus curves of the ternary system $NaNO_3$-KNO_3-$RbNO_3$. S. D. Gromakov and A. I. Zhuravlev. *Uchenye Zapiski Kazan. Gosudarst. Univ. im. V. I. Ul'yanova-Lenina, Khim.* 115, No. 3, 83-88(1955). The errors in the Gromakov (C.A. 47, 11956i; 49, 10[illegible]) method for the detn. of surface tension σ in molten salts are evaluated, and a calcn. is presented to get more accurate σ values. This calcn. is then applied in the detn. of the surface tensions of the ternary systems $NaNO_3$-KNO_3-$RbNO_3$, the liquidus curves of which are also established. The values for σ are calcd. from the values for the binary systems according to the formula $\sigma_y = \sigma_a + [(x - (y/2))/(1 - y)](\sigma_b - \sigma_a) + [(1 - x - (y/2))/(1 - y)](\sigma_c - \sigma_a)$, and these calcd. values show good agreement with the ones found experimentally. Werner Jacobson

GROMAKOV, S. D.

The formation of [illegible] S. D. Gromakov. *Uchenye Zapiski Kazan. Gosudarst. Univ. im. V. I. Ul'yanova-Lenina, Khim.* 115, No. 3, 131-4(1955).—A formula and drawings are given explaining how completely closed and regularly interrupted Liesegang rings are formed; the latter once ran even break down far enough to form a series of points. Werner Lauber.

2
1-4E4
1-4E3d
M2

GROMAKOV, S. D.

√ The evaluation of data from physicochemical measurements in one- and two-component systems. S. D. Gromakov. *Uchenye Zapiski Kazan. Gosudarst. Univ. im. V. I. Ul'yanova-Lenina, Khim.* 115, No. 3, 105-11(1955).—Math. 25 formulas and 4 drawings are presented to show how to establish an empirical formula from the anal. values of the properties of the pure compds.; how by calculus to evaluate the error in the detns. and to arrive at a methodics for conducting expts.; how by statistical analysis to find the changes with temp. and with other parameters to be applied to the empirical formulas. It is always possible in 1- and 2-component systems to arrive, by a correct math. treatment, at the error and the reliability of the measurements.

Werner Jacobson

GROMAKOV, S.D.

Effect of an ion-bonded cation on complex formation in melts.
Uch.zap.Kaz.un. 115 no.3:113-121 '55. (MLRA 10:5)

1.Kafedra neorganicheskoy khimii.
(Complex ions)

GROMAKOV, S.D.

Methods for calculating properties of ternary systems from data for binary systems. S. D. Gromakov (State Univ., Kazan). Zhur. Fiz. Khim. 30, 2373-83(1956); cf. C.A. 49, 10719c.—The calcn. of properties of ternary systems presented in triangular coördinates, is based on a quant. expression of the continuity principle. The differential-geometry principle of formation of transfer surfaces from curves expressing the properties of binary systems is used. As an example, the data on the camphor (C)-pinene hydrochloride (P) and the camphor-borneol (B) systems are used to calc. the P-B-C system. Empirical equations are used to calc. the data for the ternary system, and the limitations for the applicability of the method are indicated.

W. M. Sternberg

RM
MT

GROMAKOV, S.D.

Methods for the calculation of properties of quaternary systems from data on binary systems. S. D. Gromakov (State Univ., Kazan). Zhur. Fiz. Khim. 30, 2021-30 (1955); cf. C.A. 49, 10719c; 51, 02815.—Equations of 4-dimensional hypersurfaces (equations of the vol. of a property) are proposed for the calcu. of properties of 4-component systems from the exptl. results with 2-component systems. W. M. Sternberg

GROMAKOV, S.D.; BERGER, L.M.

Specific gravity of ternary systems. Uch.zap.Kaz.un. 116 no.5:127-131 '56. (MLRA 10:4)

1. Kafedra neorganicheskoy khimii.
(Specific gravity)

GROMAKOV, S. D.

7

Surface tension of ternary systems. S. D. Gromakov and L. M. [illegible]. *Uchenye Zapiski Kazan. Gosudarst. Univ. im. V. I. Ul'yanova-Lenina, Obshchestvo Sbornik* 116, No. 5, 132-8(1956); cf. preceding abstr.—The surface tension σ of the 4 ternary systems (*loc. cit.*) was detd. at 0°. With 80% of exptl. σ the entire ternary system can be projected to give accurate values of σ for those mixts. that do not give dependable results experimentally, because of the requirement of the "network" method that the lines connecting projected compns. must be continuous and must intersect. This requirement is so rigorous that any deviation of an exptl. value from this point of intersection can be considered erroneous, and the extent of the deviation can be used as an estimate of the exptl. error. The exptl. values of σ agreed with the calcd. and graphically detd. values within 3%. In the systems Me_2CO–EtOH–H_2O and EtOH–MeOH–H_2O the calcd. values were above the exptl. value on the far side of the binary systems Me_2CO–EtOH and EtOH–MeOH, whereas in the ternary system MeOH–Me_2CO–H_2O the calcd. values were below the exptl. line toward the binary system MeOH–Me_2CO. The deviation was small but so regular as to justify the assumption of compd. formation. J. Benzowitz

3
424j

1/1

AUTHOR: Gromakov, S.D. 76-12-1/27

TITLE: Methods for Computing the Properties of Quintenary Systems According to the Data for Binary Systems (Metody rascheta svoystv pyaternykh sistem po dannym dlya dvoynykh sistem).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 12, pp.2597-2612 (USSR)

ABSTRACT: An equation for a hypersurface of five dimensions for computing the properties of quintenary reciprocal systems with solvents according to the test data for binary systems is proposed. In the relations (1) - (10) the subdivision of the quintenary systems which correspond to the various methods of establishing formulae of interpolation, is given first. The following systems belong to the five-component systems: 1.) The proper (simple) five-component-systems. The latter are characterized by the fact that none of the pairs of initial substances participate in the exchange reaction. 2.) Quintenary reciprocal systems of 8 substances. 3.) Quintenary reciprocal systems of 9 substances. 4.) Quintenary reciprocal systems with one solvent S_1. 5.) Quintenary reciprocal systems with two solvents (S_1+S_2). For methodical reasons only, the derivation of the equations of interpolation for computing the properties of quintenary systems

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Methods for Computing the Properties of Quintenary Systems According to the Data for Binary Systems

76-12-1/27

according to the data for binary systems with the derivation of equations for the reciprocal systems, is started with one solvent. Both the quarternary and the ternary systems, which are contained in the quintenary (7), (8) system, are quoted in (11) to (30). The composition of the respective quintenary system is represented in a four-dimensional figure (symplex). The perspective projection of the composition (concentration) of the solvent S on the triangular prism of the mixture is given. The quintenary, ternary, and binary systems contained in the quintenary system can easily be controled by means of such a projection. Moreover, this symplex-projection is used for the designation of the property-change-function in binary systems. The composition of the quintenary system is represented by a figure with 4 coordinate axes (coordinate systems ?) x, y, z, π. The π coordinate axis expresses the composition (concentration) of the solvent S, whereas the composition of the quartenary reciprocal system is expressed along the x, y, and z-axes. The derivation of the equations for the composition of the quintenary system is given in the relations (30) to (37). The mixture corresponding to the composition g is assumed to be equal to one mol. The equation (37)

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for the composition of the figurative point g is solved in (45) to (54) with respect to the composition in quartenary, and some ternary systems. It is shown that the four-dimensional figure, which is applied for the representation of the composition of a quintenary reciprocal system with a solvent and which is expressed by the equation (37), should be represented by an 18-vertex-body, and not by a 7-vertex-body, as is usually assumed. The position of the property curves with 15 binary systems in a four-dimensional open figure of the composition of the quintenary reciprocal system with a solvent is given in (55). Starting with (59), the equations for the properties of the quartenary system (13) to (15) are given up to (73) inclusively. They then serve as a basis for obtaining the equation (74) looked for for the quintenary systems (7), (8). It is shown that with respect to the coordinate axes x, z all three relations (57) to (59) can be represented in the square of the mixture, though the first relation (57) shows two variables and consequently is to be represented by a two-dimensional diagram, the second relation (58) shows three variables and therefore is represented in the space and the third relation (59) has four variables.

Methods for Computing the Properties of Quintenary Systems According to the Data for Binary Systems 76-12-1/27

and must be represented four-dimensionally. This is a fact of extreme importance since the decrease of the "dimension" of the diagram of composition properties is achieved by the common expression of the composition and of the properties of the system by means of algebraic and geometric methods. The solution of the equation (74) for quartenary and ternary systems, which previously [Refs.8-10] were obtained from much more simple systems, are represented in (75) to (85). There are 5 figures, 4 tables, and 10 Slavic references.

ASSOCIATION: Kazan' State University, imeni V.I.Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina).

SUBMITTED: September 6, 1959

AVAILABLE: Library of Congress

Card 4/4

GROMAKOV, S.D.; BERGER, L.M.

Calculating properties of ternary systems on the basis of data for binary systems. Viscosity of ternary nonreciprocal systems composed of water, methanol, ethanol and glycerin at 0°C. Uch. zap. Kaz. un. 117 no.9:210-215 '57. (MIRA 13:1)

1.Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina. Kafedra neorganicheskoy khimii.
(Systems (Chemistry))

78-3-4-34/38

AUTHORS: Gromakov, S. D., Suleymanova, R. S.

TITLE: Investigating Solutions by the Method of Thermometry (Issledovaniya rastvorov po metodu termometrii)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol.3, Nr 4, pp.1048-1053 (USSR)

ABSTRACT: The thermometrical method as means for the physico-chemical analysis in the investigation of solutions was dealt with. By the determined temperature curves which are formed on the action of components, conclusions can be drawn on the presence of complexes or double salts. The accuracy of this method is lower than that of the classical method based on the titration with indicators.
The thermometric method is suited for orienting qualitative investigations as it is simple and takes little time.
The principle of the method is based on the determination of the temperature difference formed in the chemical interaction in the solution. There are 5 figures and 2 references, which are Soviet.

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78-3-4-34/38

Investigating Solutions by the Method of Thermometry

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: April 27, 1957

Card 2/2

AUTHOR: Gromakov, S. D.

76-32-2-4/38

TITLE: Methods of the Calculation of the Properties of Quinary Systems From Data on Binary Ones. II. (Metody rascheta svoystv pyaternykh sistem po dannym dlya dvoynykh sistem. II.)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 2, pp. 232-257 (USSR)

ABSTRACT: An equation for the hypersurface of properties in a quinary dimensional system was derived for calculating the properties of quinary reciprocal systems from data on binary ones: Some stages of derivation are: Ending with equation (33) the derivation was given of the equation for expressing the properties of a quinary system (1). A detailed explanation of the proof was represented in the previous paper (ref. 1). In (35 to 71) equations were given for the compositions of less involved systems entering in (1), on the basis of which the position is given of the curves for binary system properties (56-71) in a four-dimensional coordinate system (72). Furtheron the basis of the equations for the properties of quaternary systems (4,5,6), namely (73,74,75) the desired equation is set up for the binary reciprocal system

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Methods of the Calculation of the Properties of Quinary Systems From Data on Binary Ones. II. 76-32-2-4/38

equation is set up for the binary reciprocal system equation (8o).

Equations for the hyper-surfaces of properties for six quaternary systems (3-8) that is to say equations (82, 75, 74, 73, 84, 85) may be obtained from equation (8o) if the latter is solved for the values x, y, z, π indicated in the lines 1-6 of table 2. An equation for the hypersurfaces of properties (161) was derived suitable for calculating properties of quinary reciprocal systems (2) from data for binary ones.

The individual stages of the derivation are quite similar to those for system (1). The particularities in the derivation of equations (8o) and (161) may be seen in the plots on figs. 1,3 and 2, 4. There are 4 figures, 2 tables, and 3 references, all of which are Soviet.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova--Lenina (State University imeni V. I. Ul'yanov-Lenin, Kazan')

SUBMITTED: June 6, 1956

Card 2/2 1. Chemical analysis--Theory 2. Mathematics

5(4)

AUTHORS: Gromakov, S. D., Cherkasov, A. P. SOV/76-32-11-1/32

TITLE: On Methods of Calculating the Properties of Ternary and Quaternary Systems (K metodam rascheta svcystv troynykh i chetvernykh sistem) Viscosity and the Specific Gravity of the Non-Reciprocal Quaternary System Water - Methanol - Ethanol - Glycerin (Vyazkost' i udel'nyy ves chetvernoy nevzaimnoy sistemy voda - metanol - etanol - glitserin)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2473-2478 (USSR)

ABSTRACT: The present paper was carried out to experimentally control the interpolation formulae (Refs 1,2) for calculating the systems mentioned in the title according to experimental data of binary systems. To carry out the investigation under "strictest" conditions a system was chosen the components of which differ greatly with respect to their properties. The viscosity determinations were carried out with an apparatus (Diagram) which in principle consisted of a rotating vessel with the liquid to be investigated, and an elliptic "fan" suspended in the liquid. The fan hangs from a flexible glass

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rod. The rotation of the liquid is transmitted according to the viscosity by way of the fan to the glass rod which carries a mirror. This mirror reflects a light beam to a scale and thus indicates the relative viscosity. The measurements were carried out at 20°C, the error of measurement being ± 2% (rarely ± 5%). The determinations of the specific gravity were carried out in pycnometers. The elaboration of the experimental data was carried out graphically according to the "net" method. It consists of the fact that the surface related to the property is orthogonally projected from the triangular prism composition - property on the selected plane. The equations valid for ternary systems (Ref 1) may also be used for quaternary systems (Ref 2). Certain points of the composition were calculated on a tetrahedron diagram (Diagram) as an example. The calculation on the basis of the numerical values of the properties of binary systems takes place in two stages. The calculation of properties of quaternary systems according to experimental data for ternary systems can be carried out as well. A comparison of the calculation

On Methods of Calculating the Properties of Ternary and Quaternary Systems. Viscosity and the Specific Gravity of the Non-Reciprocal Quaternary System Water - Methanol - Ethanol - Glycerin SOV/76-32-11-1/32

data shows that the results from the data of ternary systems agree better with the experimental data. The data of the specific gravities agree well to a maximum error of 0.5%. The values of viscosity differ by up to 10-15%, so that in this respect only approximate values can be obtained.
There are 4 figures, 2 tables, and 2 Soviet references.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: February 25, 1957

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5(2,4)

AUTHORS: Berg, L. G., Gromakov, S. D., Zoroatskaya, I. V.

SOV/20-125-1-19/67

TITLE: Accelerated Method for the Investigation of Phase Diagrams According to the Thermographic Method (Uskorennyy metod izucheniya diagramm sostoyaniya metodom termografii)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 75-78 (USSR)

ABSTRACT: The authors suggest a simultaneous recording of thermographic data for 2, in some cases even 3 substances investigated. The thermal effects which take place in 2 samples were recorded clearly and separately on the differential curve even if they take place at almost the same temperatures. Thus, the investigation can be carried out twice as rapidly as in the normal case. This method, however, also has certain deficiencies: the main deficiency may be eliminated by the calibration of the differential thermocouple. This deficiency is due to the fact that heating in both samples takes place at a small temperature difference as far as the thermal properties of these samples are different. The suggested method was checked on the binary system $KCl-SrCl_2$ (Ref 2).

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Accelerated Method for the Investigation of Phase Diagrams According to the Thermographic Method SOV/20-125-1-19/67

Its phase diagram is relatively complicated and therefore well suited for testing the utility of the new method (Fig 1). Some conclusions on the mechanism of the chemical interaction between the substances can be drawn from a comparison of the two heating curves. The authors here use only a few examples from the results obtained. They discuss the shape of the differential curves (Figs 2,3). The complicated shape of the curve (d, e, f) indicates that the effect concerned (575°) takes place in both samples. Actually, it should take place only in sample 2, then it would be expressed by a simple "endothermal line" which passes through point d' and f. If this effect is observed as an exothermic phenomenon also in sample 1 a complicated shape of the cooling curves results due to the combination. The mentioned example of an indefinite interpretation of the thermographic data is no fundamental difficulty in the accelerated method of the thermographic investigations suggested by the authors. The easiest method of removing these deficiencies is a repeated investigation of individual compounds

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Accelerated Method for the Investigation of Phase Diagrams According to the Thermographic Method SOV/20-125-1-19/67

which are combined with a sample of another composition or by recording only one sample. There are 3 figures and 2 Soviet references.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

PRESENTED: October 25, 1958, by I. I. Chernyayev, Academician

SUBMITTED: March 10, 1958

Card 3/3

BERG, L.G.; GROMAKOV, S.D.; ZOROATSKAYA, I.V.; AVERKO-ANTONOVICH, I.N.

[Methods for selecting coefficients in chemical equations] Sposoby podbora koeffitsientov v khimicheskikh uravneniiakh. Kazan', Izd-vo Kazanskogo univ., 1959. 147 p. (MIRA 14:10)
(Chemical equations)

GROMAKOV, S.D.; KUSURGASHEV, I.M., red.; SEMENOV, Yu.P., tekhn. red.

[Some laws governing equilibrium systems] O nekotorykh zakonomernostiakh ravnovesnykh sistem. Kazan', Izd-vo Kazanskogo univ., 1961. 600 p. (MIRA 15:6)

(Systems (Chemistry))
(Phase rule and equilibrium)

S/076/60/034/011/004/024
B004/B064

AUTHOR: Gromakov, S. D. (Kazan')

TITLE: A Method of Determining the Properties of Multicomponent Systems of Any Dimension From the Data of Binary Systems

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 11, pp. 2431 - 2447

TEXT: The author has studied non-reciprocal multicomponent systems (m-component systems) the composition of which is represented as a regular (m-1) dimensional simplex in barycentric coordinates. Fig. 1 shows an (m-1) dimensional simplex in which the coordinate axis x_1 of the binary system A_1X - A_2X is expressed by the function $\Phi_{11}(x_1)$, and the coordinate axis x_2 of the ternary system A_1X - A_2X - A_3X by the functions $\Phi_{21}(x_2)$ and $\Phi_{22}(x_2)$. Fig. 2 shows the data necessary to set up the equation of the composition: First column: Concentrations A_1X_1, A_2X_1, etc. Second column:

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Abbreviated expression K_{1i}, etc. for any point in the simplex concerned. The lines of Fig. 2 represent the coefficients expressed by the coordinate axes x_1, x_2 ... x_{m-1}. Using Fig. 2, the equation for the composition of a ternary system is written for illustration. The concentration coefficients of this system are indicated by "++++" in Fig. 2:
$g_{(3)} = (1 - x_1 - x_2/2)(A_1X) + (x_1 - x_2/2)(A_2X) + x_2(A_3X)$ (1). The coefficients indicated by "...." in Fig. 2 are used in a similar manner for a hexatopic system. The simpler simplexes are eliminated by a section with the help of hyperplanes. The equation for the hyperplanes are found with the canceling factor of the equation of the composition. The expression $A_6X = x_5 = 0$ is substituted in the equation for the hexatopic system. The number of simpler systems belonging to a non-reciprocal m-component system can be determined from the equation $J = \binom{m}{i}$ (3). Furthermore, in determining the properties of an m-component system from the data for binary systems, the calculation of the imaginary points is

A Method of Determining the Properties of Multicomponent Systems of Any Dimension From the Data of Binary Systems

S/076/60/034/011/004/024
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applied, which are uniformly distributed in the (m-1) simplex. If these points represent a multiple (1 : d) of the concentration in which d is an integral positive number, they lie in the nodes of the coordinate system. All of them fall therefore into the sections produced by hyperplanes, which are made for any component of the system in accordance with the concentration of the components (1 : d). The following problems are solved: 1) Determination of the total number of imaginary points in the simplex whose coordinates are all rational with respect to the nominator d; 2) a logical enumeration of these points; 3) determination of the coordinates on the basis of the ordinal number of the imaginary point; 4) determination of the ordinal number of points in given sections performed with hyperplanes. There are 2 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: February 6, 1958

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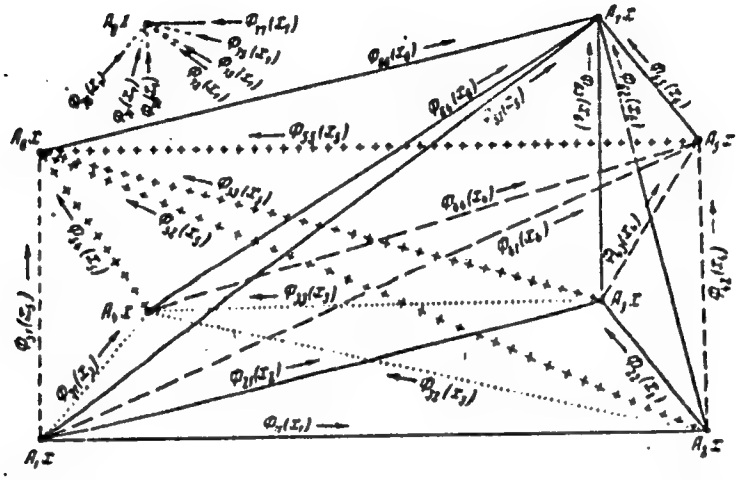

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$[A_1 X_1]$	K_{11}	1	$-x_1$	$-\frac{x_3}{2}$	$-\frac{x_3}{4}$	$-\frac{x_3}{8}$	$-\frac{x_3}{16}$	$-\frac{x_3}{32}$	$-\frac{x_3}{64}\cdots$	$A_1 x / T_1$
$[A_2 X_1]$	K_{21}	x_1	$-\frac{x_3}{2}$	$-\frac{x_3}{4}$	$-\frac{x_3}{8}$	$-\frac{x_3}{16}$	$-\frac{x_3}{32}$	$-\frac{x_3}{64}\cdots$	$A_2 x / T_2$	$\Phi_{21}(x_1)$
$[A_3 X_1]$	K_{31}	x_2	$-\frac{x_3}{2}$	$-\frac{x_3}{4}$	$-\frac{x_3}{8}$	$-\frac{x_3}{16}$	$-\frac{x_3}{32}\cdots$	$A_3 x / T_3$	$\Phi_{32}(x_1)$	$\Phi_{31}(x_1)$
$[A_4 X_1]$	K_{41}	x_3	$-\frac{x_3}{2}$	$-\frac{x_3}{4}$	$-\frac{x_3}{8}$	$-\frac{x_3}{16}\cdots$	$A_4 x / T_4$	$\Phi_{43}(x_1)$	$\Phi_{42}(x_1)$	$\Phi_{41}(x_1)$
$[A_5 X_1]$	K_{51}	x_4	$-\frac{x_3}{2}$	$-\frac{x_3}{4}$	$-\frac{x_3}{8}\cdots$	$A_5 x / T_5$	$\Phi_{54}(x_1)$	$\Phi_{53}(x_1)$	$\Phi_{52}(x_1)$	$\Phi_{51}(x_1)$
$[A_6 x_1]$	K_{61}	x_5	$-\frac{x_3}{2}$	$-\frac{x_3}{4}\cdots$	$A_6 x / T_6$	$\Phi_{65}(x_1)$	$\Phi_{64}(x_1)$	$\Phi_{63}(x_1)$	$\Phi_{62}(x_1)$	$\Phi_{61}(x_1)$
$[A_7 x_1]$	K_{71}	x_6	$-\frac{x_3}{2}\cdots$	$A_7 x / T_7$	$\Phi_{76}(x_1)$	$\Phi_{75}(x_1)$	$\Phi_{74}(x_1)$	$\Phi_{73}(x_1)$	$\Phi_{72}(x_1)$	$\Phi_{71}(x_1)$
$[A_8 x_1]$	K_{81}	$x_7\cdots$	$A_8 x / T_8$	$\Phi_{77}(x_1)$	$\Phi_{76}(x_1)$	$\Phi_{75}(x_1)$	$\Phi_{74}(x_1)$	$\Phi_{73}(x_1)$	$\Phi_{72}(x_1)$	$\Phi_{71}(x_1)$

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ACCESSION NR: AP4036976 S/0078/64/009/005/1305/1306

AUTHOR: Gromakov, S. D.; Kurinnaya, V. N.; Laty*pov, Z. M.; Chvala, M. A.

TITLE: A new modification of zone purification of materials.

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 5, 1964, 1305-1306

TOPIC TAGS: zone purification, method, crystallization front, monocrystal production, semiconductor, sodium nitrate, cadmium nitrate tetrahydrate, impurity separation, heating device, design

ABSTRACT: A method of zone purification was developed in which the crystallization plane area is increased, thereby enhancing the production of larger monocrystals particularly applicable in the production of semiconductors. This was accomplished by devising a method for maintaining the same temperature gradient near the periphery of the molten zone as in its center. Thus, heating circuits were constructed in the form of the curvature of the molten zone and of such design as to create a planar crystallization front by compensating for the heat removal. Perforated metal grids or conductors between electrodes (rectangular shape for rectangular rods or circular for cylindrical bars) may be used. These

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ACCESSION NR: AP4036976

should be of metals or alloys nonreactive with the molten metal. In a simple design, a vertical cylinder was heated at different temperatures. It was heated in the upper section to a temperature higher than the fusion temperature of the material and in the lower section to a lower temperature. A test tube containing the sample was lowered slowly so crystallization started at the bottom. A rigid heating element was kept at the temperature boundary to give a planar crystallization front. Tests run with sodium nitrate and cadmium nitrate tetrahydrate using colored impurities (sample lowered at 12 mm/hr) showed the impurities to be collected at one end of the bar. Orig. art. has: 2 figures.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet, (Kazan State University); Penzenskiy pedagogicheskiy institut (Penzen Pegagogical Institute)

SUBMITTED: 16Nov62 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: GC,IE NO REF SOV: 000 OTHER: 000

Card 2/2

L 16066-65 EWT(1)/EWP(e)/EPA(s)-2/EWG(k)/EWT(m)/EPF(c)/EPF([illegible]-2/EWG(v)/[illegible]
Pt-10/Pu-4 IJP(c)/ESD(t)/AFWL/ASD(a)-5 WW/AT/RM/WH
ACCESSION NR: AP4046457 S/0078/64/009/010/2485/2487

AUTHOR: Gromakov, S. D.; Zoroatskaya, I. V.; Laty*pov, Z. M.; Chvala, M. A.; Eydel'man, Ye. A.; Bady*gina, L. I.

TITLE: Method for investigating phase diagrams of semiconducting systems

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 10, 1964, 2485-2487

TOPIC TAGS: semiconductor, phase diagram, semiconductor system, test apparatus design, solidus temperature, liquidus temperature

ABSTRACT: A method was developed for obtaining thermal data for semiconducting materials which avoids the inherent difficulties of air oxidation, thermal decomposition, and reaction with thermocouple and container materials. The material for thermographic investigation is placed in a quartz ampoule (3-4 mm i. d. 25-30 mm long), sealed under 1-2 mmHg. The thermocouple (fig. 1) made of 3-5 x 12-14 mm platinum foil (a) with soldered platinum rhodium leads (b, c) is arranged so the platinum foil surrounds the ampoule (fig. 1-C). The ampoule is

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L 6066-65
ACCESSION NR: AP4046457

placed in a quartz tube filled with alumina for thermal insulation; and heated in a vertical electric furnace. Using this arrangement, the solidus and liquidus temperatures were obtained for the binary systems PbS-PbSe, PbS-PbTe, CdTe-ZnTe, CdTe-HgTe, and phase diagrams (fig. 2) were constructed. Orig. art has: 4 tables and 3 figures.

ASSOCIATION: Kazanskiy gosudarstvenny*y universitet (Kazansk State University) Penzenskiy pedagogicheskiy institut (Penzensk Pedagogical Institute)

SUBMITTED: 01Feb62 ENCL: 02

SUB CODE: SS NO REF SOV: 001 OTHER: 000

Card 2/4

L 16[illegible]6-65
ACCESSION NR: AP4046457

ENCLOSURE: 01

0

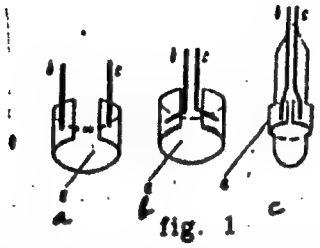

fig. 1

Arrangement of the individual thermocouples

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L 16 66-65
ACCESSION NR: AP4046457

ENCLOSURE: 02

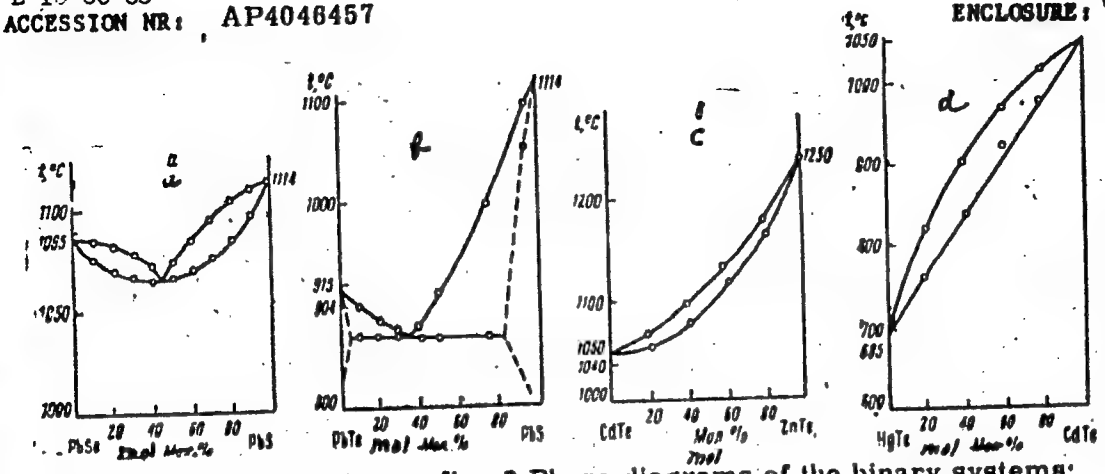

fig. 2 Phase diagrams of the binary systems:
a--PbSe-PbS; b--PbTe-PbS; c--CdTe-ZnTe; d--HgTe-CdTe

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Methods of estimating the properties of multicomponent systems of any dimensionality from data for binary systems. Part 2. Zhur. fiz. khim. 36 no.6:1401-1413 Je '62.
(MIRA 15:3)

1. Penzenskiy pedagogicheskiy institut imeni Belinskogo.

L 10780-67 EWT(1) IJP(c) AT

ACC NR: AP7003501 SOURCE CODE: UR/0076/66/040/006/1262/1264

17

AUTHOR: Grozakov, S. D.; Latypov, Z. H.; Kirilyuk, P. S.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet); Penza Pedagogic Institute im. V. G. Belinskiy (Penzenskiy pedagogicheskiy institut)

"Treatment and Systematization on the Basis of D. I. Mendeleyev's Periodic System of Elements of Properties of Semiconductor Compounds of the Type A (III)-B(V)"

21

Moscow, Zhurnal Fizicheskoy Khimii, Vol 40, No 6, Jun 66, pp 1262-1264

ABSTRACT: A three dimensional plot of values of the width of the forbidden zone was made for semiconductor compounds A(III)-B(V) by using a network arrangement of the compounds according to positions of elements A and B in the periodic system. Experimental values of the width of the forbidden zone a smooth curved surface. The width of the forbidden zone of several semiconductor compounds on which no experimental data were available was determined by inter- and extrapolation (AlBi, 0.7 ev; GaBi, 0.25 ev; TlAs ~0.15 ev). The method described, which is convenient for the determination of unknown characteristics and for the checking of experimental data, can be applied to semiconductor compounds of other types and also presumably to other properties of semiconductors. Orig. art. has: 1 figure and 1 table. [JPRS: 38,967]

TOPIC TAGS: semiconducting material, forbidden zone width

SUB CODE: 20 / SUBM DATE: 11Mar65 / ORIG REF: 004

UDC: 541.20 + 621.315.592

Card 1/1

0036 0034

GROMAKOV, Vasiliy Vasil'yevich; ORLOV, Aleksandr Vasil'yevich; VORONOV, A.I., red.; RAKITIN, I.T., tekhn. red.

[Role of the subjective factor in the building of communism] Rol' sub"ektivnogo faktora v stroitel'stve kommunizma. Moskva, Izd-vo "Znanie," 1961. 31 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.2, Filosofiia, no.17) (MIRA 14:11)

(Communism) (Efficiency, Industrial)

GROMAKOVA, L. M.

USSR/Chemistry - Alkali Metal and Alkaline Earth Salts Oct 53

"Some Regularities in the Phase Diagrams of Binary Systems," S. D. Gromakov, L. M. Gromakova, Kazan' State U

Zhur Fiz Khim, Vol 27, No 10, pp 1545-55

Demonstrates the applicability of regularities established earlier (Zhur Fiz Khim, Vol 24, p 641, 1950; Vol 25, p 1014, 1951) for the critical evaluation of published data on the melting point curves of binary systems. Checked

272T13

results exptly on binary systems composed of halides of Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, and Mn or nitrates of Li, Na, K, Rb, Cs, Ca, Sr, and Ba.

"Some Ways of Applying Volumetric Gas Analysis to Organic Substances." Cand Chem Sci, Kazan' State U, Kazan' 1955. (KL, No 10, Mar 55)

So: Sum. No 670, 29 Sept 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

GROMAKOV, S.D.; GROMAKOVA, L.M.

Treatment of the liquidus of binary systems. Zhur.fiz.khim. 29 no.4: 745-749 Ap '55. (MLRA 8:8)

1. Kazanskiy gosudarstvennyy universitet im. Chernyshevskogo. (Phase rule and equilibrium) (Chlorides)

L 10313-66 EWT(m)/ETC/EWG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD

ACC NR: AP6000098 SOURCE CODE: UR/0360/65/000/002/0041/0044

26
B

AUTHOR: Buketov, Ye. A.; Makhmetov, M. Zh.; Gromakova, Z. I.

ORG: None

TITLE: Rapid method of decomposing copper electrolyte slime for determining selenium and tellurium

SOURCE: AN KazSSR. Izvestiya. Seriya khimicheskikh nauk, no. 2, 1965, 41-44

TOPIC TAGS: selenium, tellurium, quantitative analysis

ABSTRACT: Selenium and tellurium are present in copper electrolyte slimes mainly as selenides and tellurides. The authors found that a cold mixture of hydrochloric acid and hydrogen peroxide decomposes such slimes: a 0.1—1.0 g sample is completely decomposed when treated for 5—7 min at room temperature 30 ml of 2:1 HCl to which 5—10 ml H_2O_2 had been added, i.e., all of the selenium and tellurium go into solution. The proposed decomposition process was checked on slimes of the Kyshtym and Alaverdi plants, and was found to be highly reliable and convenient. The method is recommended for other raw-material sources of selenium and tellurium. Orig. art. has: 1 table.

SUB CODE: 07 / SUBM DATE: 26Oct64 / ORIG REF: 014

Card 1/1

GROMAKOVA, Z.I.; BUKETOVA, Ye.A.; MAKHMETOV, M.Zh.; DYMOV, A.M.

Determination of tellurium forms in copper electrolytic slimes. Zhur. anal. khim. 20 no.12:1364-1367 '65. (MIRA 18:12)

1. Khimiko-metallurgicheskiy institut AN KazSSR, Karaganda. Submitted October 27, 1964.

GROMAKOVSKAYA, M.M.

~~Action of~~ botulinus toxin on the excitability of the carotid sinus and the vasomotor center in immunized and nonimmunized rabbits. Biul.eksp.biol. i med. 41 no.4:33-36 Ap '56. (MLRA 9:8)

1. Iz laboratorii immuniteta (zav. prof. K.T.Khalyapina) otdela eksperimental'noy patologii infektsii i immuniteta (zav. deystvitel'nyy chlen AMN SSSR P.F.Zdrodovskiy) Instituta epidemiologii i mikrobiologii imeni N.F.Gameleya. (Dir. deystvietl'nyy chlen AMN SSSR prof. V.D.Timakov) AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR G.V.Vygodchikovym.

(CLOSTRIDIUM BOTULINUM,
toxin, eff. on carotid sinus & vasomotor center irritability in rabbits immunized & not immunized with botulin anatoxin (Rus))

(CAROTID SINUS, effect of drugs on,
botulin toxin, in rabbits immunized & not immunized with botulin anatoxin (Rus))

(VACCINES AND VACCINATIONS,
botulin anatoxin, eff. on carotid sinus & vasomotor center responses to botulin toxin (Rus))

(BLOOD PRESSURE, effect of drugs on,
botulin toxin, in rabbits immunized & not immunized with botulin anatoxin (Rus))

GROMAKOVSKAYA, M.M.

Role of neuro-reflex mechanisms in the pathogenesis of a disease induced by the introduction of botulin toxin into the carotid sinus. Biul.eksp.biol. i med. 42 no.8:27-30 Ag '56. (MLRA 9:11)

1. Iz laboratorii immuniteta (zav. - prof. K.T.Khalyapina) otdela eksperimental'noy patologii infektsii i immuniteta (zav. - deystvitel'nyy chlen AMN SSSR P.F.Zdrodovskiy) Instituta epidemiologii i mikrobiologii imeni N.F.Gamaleya AMN SSSR (deystvitel'nyy chlen AMN SSSR V.D.Timakov), Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR G.V.Nygodchikovym

(CLOSTRIDIUM BOTULINUM,
toxin, prod. of lesions of various organs by admin. into carotid sinus, role of nervous system (Rus))
(CAROTID SINUS,
prod. of lesions of various organs by admin. of botulin into carotid sinus, role of nervous system (Rus))
(NERVOUS SYSTEM, physiology,
in exper. lesions of various organs induced by admin. of botulin into carotid sinus (Rus))

USSR/Human and Animal Physiology - Effects of Physical Factors. T-13

Abs Jour : Ref Zhur - Biol., No 7, 1957, 32311

Author : Stern, L.S., Rapoport, S.Y., Gromakovskaya, M.M., Zubkova, S.R.

Inst : -

Title : Influence of X-Ray Irradiation on the Permeability of Histohematic Barriers.

Orig Pub : Biofizika, 1957, 2, No 187-196.

Abstract : By introducing P^{32} and I^{131} into the blood, the change of the permeability of the hemoencephalic barrier (HEB) and of the hemoencephalic barriers of the liver and muscles was studied in rats after exposure (E) to 800 r. The radioactivity of the blood decreased 47% through the 5 minutes after the introduction of P^{32} into the heart cavity, in the following 10 minutes - 25%, and beginning with 30 minutes after the introduction - 1-2% in the course of each 15 minutes. Isotopes were introduced

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into the blood or immediately after E (if the animals were prepared in the course of the first 6 hours after E) or for 1-5 minutes before preparation (if it occurred in 1-3 days after E). In the unexposed rats, the most radioactivity was observed in the liver, the least - in the brain, with which the appearance of P^{32} in the brain is noted in 15-30 minutes, and in the liver and muscles - from the first minute after the action of radiation. After E, an increase of permability is noted in the liver in 1 minute, in the muscles - in 3-15 minutes, and in the brain - in 45 minutes. The maximum increase of radioactivity of the tissues after E develops in the liver in 45 minutes, in the muscles in 60 minutes, and in the brain - in 1-3 hours. In 2 days E, a significant decrease is observed of the permeability of HEP and of the histohematic barriers of the liver and muscles, which is especially sharply expressed in 3 days. A decrease of the rate of inclusion of P^{32} in the

USSR/Human and Animal Physiology - Effects of Physical Factors. T-13

Abs Jour : Ref Zhur - Biol., No 7, 1958, 32311

fraction of acid-insoluble P is noted.
It is proposed that the strengthening of the delay of P^{32} in the tissues in the second or third day after E is connected with the increase of the adsorbent ability of the tissues. Analogous results are obtained with the introduction of I^{131}.

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EXCERPTA MEDICA Sec.4 Vol.11/4 Med.Microb. etc. Apr1958

903. INFLUENCE OF TETANUS AND BOTULINOGENIC TOXINS ON CHRONAXY IN IMMUNIZED RABBITS (Russian text) - Gromakovskaya M. N. F. Gamalei Inst. of Epidemiol. and Microbiol. of the USSR. Acad. of Med. Sci., Moscow - BIULL. EKSPER. BIOL. MED. 1957, 43/1 (46-50) Illus. 2

Investigations of the chronaxy of the tibial muscle and the sciatic nerve, spinal cord and motor area of the cerebral cortex were carried out on 34 rabbits, immunized and not immunized against tetanus and botulism. It was found that injection into the tibial muscle of tetanus toxin produced in non-immunized rabbits generalized or localized tetanus and marked changes in the chronaxy of the muscle and the nerve: initial shortening and subsequent marked lengthening, with gradual return to the original level. In the rabbits immunized against tetanus the toxin did not produce any symptoms of the disease and the changes in chronaxy were slight and disappeared on the 3rd-4th day. In the experiments with lethal doses of the botulinus toxin type A, in contradistinction to the immunized animals a considerable disturbance of chronaxy was observed in the non-immunized rabbits, resulting in marked lengthening of chronaxy, especially marked in the motor area of the first clinical symptoms. The changes in both cases developed before appearance of the first clinical symptoms. The data obtained demonstrate that in the localized form of tetanus the changes at the level of the irritative process spread, fundamentally, to the motor neurons of the spinal cord segments while in generalized tetanus they affect the motor area of the cortex. References 5. Davidova - Moscow (S)

GROMAKOVSKAYA, M. M., Doc Biol Sci (diss) -- "Neurohumoral interaction of the central nervous system and the skeletal muscles in fatigue". Moscow, 1959, published bythe Acad Sci USSR. 31 pp (Acad Sci USSR), 200 copies (KL, No 24, 1959, 131)

24(0)

AUTHOR: Gromakovskaya, M. M. SOV/20-124-1-59/69

TITLE: Effect of X-Rays Upon the Reflectory Excitability of the Center of the Nervus Vagus (Deystviye rentgenovskikh luchey na reflektornuyu vozbudimost' tsentra bluzhdayushchego nerva)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 205 - 208 (USSR)

ABSTRACT: In an earlier paper (Ref 1) the author proved that a total X-ray irradiation of rats with a lethal dose soon causes a change of the permeability of the hemato-encephalic barrier. This is prevented when the trunk is screened off with lead (Ref 2). The initial variations of the mentioned permeability are therefore on the whole a consequence of disturbances originating from the visceral organs (Refs 3-6). The violability of these organs is brought into relation with a disturbance of the vagus function, e.g. vomiting (Ref 4), disorder in the gastric movements (Ref 7), the fall of blood pressure of irradiated animals can be prevented by the

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Effect of X-Rays Upon the Reflectory Excitability of the SOV/20-124-1-59/69
Center of the Nervus Vagus

introduction of atropine transection of the nervus vagus as well as by screening off of the abdominal region. A change of the functional state of the nervus vagus was observed in irradiated animals (Refs 9,10). Radiation damages also the parasympathetic nervous system (Ref 2). It is the aim of the present paper to determine early variations of the excitability mentioned in the title and to determine the interrelations between the rate of occurrence of the permeability disturbances of the hemato encephalic barrier (blood liquor barrier) and the change of the functional state of the vagus center. The reflex excitability of the vagus center of 160 white rats was determined at various periods of time after irradiation (dose:600 r). The functional state of the center was determined on the basis of retardation of the pulse rate in consequence of breathing ammonia vapor. The results are given in figure 1. As, however, the possibility was left open whether the decrease of the reflex was due to a direct radiation effect or to changes in the peripheral organs, in the course of further experiments

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Effect of X-Rays Upon the Reflectory Excitability of the Center of the Nervus Vagus SOV/20-124-1-59/69

only parts of the body were irradiated, whereas the rest was screened off. An irradiation of trunk or abdomen as well as total irradiation were fatal. Death occurred after 5-7 days, whereas an irradiation of the head showed no effect. Also the functional state of the vagus center remained unchanged in the case of an irradiation of the head. An irradiation of other parts of the body caused a reduced activity of the reflex. Thus, the changes are mainly due to disturbances of the organs in the abdominal cavity. The result obtained did, however, not contribute towards detecting the intimate mechanisms causing the changes of reflexes. In order to eliminate a possible tonus increase of the sympathetic nervous system, a) ergotamine was introduced or b) both sympathetic upper cervical ganglia were removed. Table 2 shows that these two operations do not prevent the decrease of the reflex excitability of the vagus center in irradiated animals. The changes were, however, less marked. To excite the vagus center morphine and bromine were introduced. In the latter case the reflex excitability of the vagus center of control animals is considerably increased and the pulse

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Effect of X-Rays Upon the Reflectory Excitability of the Center of the Nervus Vagus SOV/20-124-1-59/69

rate is slowed down. In irradiated animals the normal effect of the rays failed to take place. This confirms the assumption that a preceding tonus increase of the vagus center prevents disturbances of its functional state in case of irradiation. From a comparison of the results obtained can be seen that the change of permeability of the blood liquor barrier in irradiated animals is a consequence of disturbances of the functional state of the nervous system. The disturbances are likely to originate from the radio sensitive organs of the abdominal cavity. There are 3 figures and 12 references, 5 of which are Soviet.

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biological Physics, Academy of Sciences, USSR)

PRESENTED: August 13, 1958, by L. S. Shtern, Academician

SUBMITTED: August 11, 1958

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17(1), 21(3) SOV/20-126-3-67/69

AUTHORS: Shtern, L. S., Academician, Rapoport, S. Ya., Gromakovskaya, M. M.

TITLE: The Importance of the Nervous System for the Change of Permeability of the Histo-hematic Barriers Under the Effect of Irradiation (Rol' nervnoy sistemy v izmenenii pronitsayemosti gisto-gematicheskikh bar'yerov pri obluchenii)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 3, pp 699 - 702 (USSR)

ABSTRACT: In previous papers by the authors (Refs 1,2), it was ascertained that a single total irradiation of animals with a lethal dosis of X-rays leads to early changes as mentioned in the title. A previous introduction of novocaine, atropine or morphine prevents these changes of the barriers mentioned in the title (HHB). The present investigation clarifies the problem of whether the protective effect of the neurotropic substances is maintained in case of their introduction a f t e r the irradiation; further - what effect such an introduction b e f o r e and a f t e r the irradiation has on the duration of life of the animals exposed to rays. The

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effect on the HHB-permeability. As table 1 shows, the nervous mechanism play an important part in the rise and further development of permeability variations of the HHB produced by irradiation (in agreement with Refs 3-13). As at a screening of the belly region no HHB-permeability changes due to irradiation take place, tests were carried out to examine whether these changes are caused by disturbances of the organs in the belly due to irradiation. The receivers of the belly were isolated by the introduction of 1.0 ml of anaesthetics (Ref 14) 17-18 hours after the irradiation. From the results (Table 2) it can be seen that the irradiation of the animals after the isolation of the receivers does not bring about an increase in the HHB-permeability. Effect of the introduction of neurotropic substances on the survival of animals exposed to rays. These substances were introduced 10-15 min before, or 5 min after, the irradiation (novocaine - 20 mg per animal, atropine - 1 mg, and morphine - 10 mg per animal). Table 3 shows that only the morphine has a distinct influence on the survival of animals exposed to rays. This protective effect is

The Importance of the Nervous System for the Change of SOV/20-126-3-67/69
Permeability of the Histo-hematic Barriers Under the Effect of Irradiation

attributed to a tissue hypoxy brought about by an inhibition of the breathing center. Such mechanism presupposes its interference already during the irradiation. This is confirmed by a saving of the animals only if the morphine is introduced b e f o r e the irradiation. Both the results of the authors and the publication references lead to the conclusion that the protective effect of novocaine is brought about by the isolation of the receiving portion of the reflexes which are produced by irradiation due to a change in the chemism of organs and tissues. There are 3 tables and 22 references, 12 of which are Soviet.

SUBMITTED: March 18, 1959

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17 (1), 21 (3)

AUTHORS: Gromakovskaya, M. M., Krichevskaya, Ye. I., Rapoport, S. Ya.

SOV/20-126-4-52/62

TITLE: The Effect of Antihistamine Preparations on the Development of Some Early Ray Disturbances (Vliyaniye antigistaminnykh preparatov na razvitiye nekotorykh rannikh luchevykh narusheniy)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 4, pp 876-879 (USSR)

ABSTRACT: The importance of histamine for the development of a radiation syndrome (Refs 1-8) has not yet been fully clarified: different investigators have different opinions about the efficiency of histamine preparations in radiation sickness. In previous papers (Refs 14, 15) it was proved that already 5 minutes after irradiation a rise in level of the free histamine occurs in various tissues. Their histaminepexy [gistaminopeksicheskaya] power (HPP) decreases. These changes in the chemical composition of the immediate medium of organs and tissues may be important for the origin of various disturbances in the organism irradiated. To investigate this problem, antihistamine preparations (Dimedrol and Pernovine) were administered to white rats before irradiation. All investigations were carried out 45

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The Effect of Antihistamine Preparations on the Development of Some Early Ray Disturbances

SOV/20-126-4-52/62

minutes after irradiation. The results were summarized as follows: Effect of antihistamine preparations on: 1) the level of free histamine, and on the HPP of the tissues of the animals irradiated (Refs 14, 15) (Table 1); 2) the permeability of the histohematic barriers (HHB) (Table 3); 3) the reflex excitability of the center of the n. vagus (Table 4); 4) the reaction of the marrow of the bones at total irradiation (Table 5). The results found by the authors show that the administration of the said antihistamine preparations not only prevents the rise in level of free histamine in tissues but also the permeability disturbance of the HHB and the change in the functional state of the vagus center. Finally the early damages to the marrow of the bones are weakened. Thus, it is possible - by lowering the level of free histamine originating in the tissues of the animals irradiated - to interrupt the chain of reactions which effect the appearance and development of various ray

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damages. On the other hand, the results obtained cannot be regarded - due to the complicated action of various antihistamine preparations - as an undisputed proof of the fact that histamine plays an important part in early radiation reactions. According to publication references (Ref 18), such histamine preparations as prometazine and chlorpromazine also inhibit the release of 5-hydroxy-tryptamine. Further investigations are necessary to decide this problem. There are 5 tables and 18 references, 4 of which are Soviet.

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biological Physics of the Academy of Sciences, USSR)

PRESENTED: March 5, 1959, by L. S. Shtern, Academician

SUBMITTED: March 5, 1959

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172750

S/020/60/134/001/037/038/XX
B016/B060

AUTHOR: Gromakovskaya, M. M.

TITLE: Role of Serotonin in the Stimulating Action of the Cerebral Extract Upon the Efficiency of a Fatigued Nerve - Muscle System

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1, pp. 221 - 224

TEXT: The author has stated in a previous paper (Ref 1) that the cerebral extract and the blood flowing off from the brain contain substances having the property of raising the efficiency of a fatigued muscle. It has been also noted that the stimulating properties of cerebral extracts are caused by low-molecular substances of organic nature. As is known from the literature, serotonin has been found in the cerebral tissue and the cerebral perfusate on an irritation of the pneumogastric nerve (Ref. 8). The author supposed that the activation of fatigued muscles under the influence of cerebral extracts was to be explained by the presence of serotonin, and this is the problem she

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Role of Serotinin in the Stimulating Action of the Cerebral Extract Upon the Efficiency of a Fatigued Nerve - Muscle System

S/020/60/134/001/037/038/XX
B016/B060

wanted to clarify in the article under consideration. Methods used: extracts were prepared from the brain of white rats 1 ml of Ringer solution was taken for 1 g of cerebral tissue After the animal had been decapitated and exsanguinated the brain was taken out, comminuted, and placed in a Ringer solution for 15 - 20 min. The activity of the centrifugate of this suspension was examined on a nerve-muscle preparation of a frog (Leven-Trendelenburg's method). Prior to the examination the volume of the solution was doubled by diluting with water. It was then perfused by way of a canule introduced into the abdominal artery, and extracted through the open abdominal vein Relaxation of muscular fibre was brought about by a rhythmical irritation of the lumbar plexus by condenser discharges. A 10 g stress was applied to the muscle Muscular contractions were recorded on a kymograph Table 1 shows the effect of serotonin and the cerebral extracts upon the contractions. The efficiency increase of fatigued muscles on perfusion by serotonin solution (concentration $1 \cdot 10^{-6}$) attains on an average 175% of the contraction intensity before serotonin perfusion A lower concentration

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Role of Serotonin in the Stimulating Action of the Cerebral Extract Upon the Efficiency of a Fatigued Nerve - Muscle System

S/020/60/134/001/037/038/XX
B016/B060

($1 \cdot 10^{-7}$) has no effect upon the efficiency of fatigued muscles. The serotonin-induced muscular contractions can be unlocked by diethyl amide of lysergic acid. Diethyl amide reduces, but does not neutralize the stimulating effect of cerebral extracts. Further experiments made by the author confirm the mentioned data supplied in the literature, according to which the stimulating effect of serotonin is largely neutralized by reserpine (Table 2). Summarizingly, the author draws the following conclusions: 1) Serotonin is certain to stimulate the efficiency of the nerve - muscle system. 2) Serotonin contained in the cerebral extract participates in the stimulating action of the cerebral extract. 3) The fact that both diethyl amide of lysergic acid and reserpine do not entirely neutralize the stimulating activity of cerebral extracts proves that the presence of serotonin is not sufficient to explain the stimulating action of cerebral extracts. 4) The ability of cerebral extracts to activate fatigued muscles is explained by the presence of a number of other substances in addition

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Role of Serotonin in the Stimulating Action of the Cerebral Extract Upon the Efficiency of a Fatigued Nerve - Muscle System

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B016/B060

to serotonin. These substances give rise to a complex of physiologically active cerebral metabolites. There are 2 tables and 16 references : 2 Soviet, 12 US, and 2 Swiss.

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biological Physics of the Academy of Sciences USSR)

PRESENTED: March 29, 1960, by L S. Shtern Academician
SUBMITTED: March 29, 1960

Card 4/4

GROMAKOVSKAYA, M.M.

Role of serotonin in the effect of the central nervous system on the working capacity of the neuromuscular apparatus. Dokl. AN SSSR 140 no.3:724-727 S '61. (MIRA 14:9)

1. Institut biologicheskoy fiziki AN SSSR.
(INDOLOL) (FATIGUE)

GROMAKOVSKAYA, M.M.

Mechanism of the action of serotonin on the efficiency of the neuromuscular system. Dokl.AN SSSR 144 no.1:238-241 My '62. (MIRA 15:5)

1. Institut biologicheskoy fiziki AN SSSR. Predstavleno akademikom L.S.Shtern.

(INDOLOL—PHYSIOLOGICAL EFFECT)

ACCESSION NR: AT3011779 S/2949/63/000/000/0094/0113

AUTHOR: Gromakovskaya, M. M.

TITLE: Early radiation changes in reflex excitability of the vagus nerve center and mechanisms of their appearance

SOURCE: Gisto-gematicheskiye bar'yery* i ioniziruyushchaya radiatsiya. Sbornik rabot laboratorii fiziologii. Moscow, AN SSSR, 1963, 94-113

TOPIC TAGS: ionizing radiation, reflex excitability, vagus nerve center, morphine, pulse rate, X-irradiation dose, sympathetic nerve system, early radiation damage, bromine, screening of abdominal region, antihistamine, local anesthesia, hematoencephalitic barrier permeability

ABSTRACT: Experimental rats were X-irradiated (RUP-1 unit, focal length 30 cm, 31.4 r/min) with 100, 400, 600, and 800 r doses. Reflex excitability of the vagus nerve center was determined by change in pulse rate recorded by an EKP-4 electrocardiograph after stimulating olfactory receptors with ammonia. Findings show that a 100 r

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ACCESSION NR: AT3011779

radiation dose increases reflex excitability of the vagus nerve center, but 600-800 r doses reduce reflex excitability of the vagus nerve center. The appearance of early functional radiation damage in the vagus nerve center is not affected by intraabdominal administration of ergotamine, suboccipital administration of chlorpromazine, or removal of sympathetic ganglions from the neck. Early reflex excitability radiation damage in the vagus nerve center of animals exposed to lethal doses can be avoided by administering morphine or bromine intraabdominally 15-20 min before irradiation, by screening the abdominal region, by anesthetizing the abdominal region locally with novocaine, and by administering antihistamine preparations 15-20 min before irradiation. Functional nervous system change in radiation is one of the contributing mechanisms to hematoencephalitic barrier permeability damage. Orig. art. has: 8 figures, 5 tables.

ASSOCIATION: Laboratoriya fiziologii. Moscow. AN SSSR (Physiology Laboratory. AN SSSR)

SUBMITTED: 00 DATE ACQ: 07Oct63 ENCL: 00

SUB CODE: AM NO REF SOV: 059 OTHER: 028

Card 2/2

GROMAKOVSKAYA, M.M.; DISH, T.N.

Effect of fatigue on the permeability of the hematoencephalic barrier. Dokl. AN SSSR 150 no.5:1171-1173 Je '63. (MIRA 16:8)

1. Institut biologicheskoy fiziki AN SSSR. Predstavleno akademikom L.S.Shtern.

(HEMATOENCEPHALIC BARRIER) (FATIGUE)

ACCESSION NR: AP4035822 S/0020/64/156/001/0187/0190

AUTHOR: Gromakovskaya, M. M.

TITLE: Role of histamine and serotonin in irradiation changes of excitability of the vagus nerve center

SOURCE: AN SSSR. Doklady*, v. 156, no. 1, 1964, 187-190

TOPIC TAGS: radiation protection, histamine, serotonin, vagus center, central nervous system, X ray

ABSTRACT: It has been previously established by the author (DAN 124, no. 1, 1959, 205) that x-irradiation of 600—800 r lowers the excitability of the vagus center. It is also known that ionizing radiation changes the level of free histamine and serotonin in the tissues of various organs. In the present work, the effect of histamine and serotonin on the heartbeat of normal and irradiated white rats was investigated. Intraperitoneal administration of these chemicals lowered the heart beat. A comparison of the effect of serotonin with that of irradiation indicates that the prevention of changes in the functional state of the vagus center caused by irradiation is due to the effect of serotonin on the central nervous system.

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ACCESSION NR: AP4035822

This is in agreement with the fact that both histamine and serotonin have a protective effect against irradiation. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: Institut biologicheskoy fiziki. Akademii nauk SSSR (Institute of Biophysics, Academy of Sciences SSSR)

SUBMITTED: 29Jun63 ATD PRESS: 3060 ENCL: 00

SUB CODE: LS, OC NO REF SOV: 007 OTHER: 009

Card 2/2

GROMAKOVSKAYA, Mariya Mikhaylovna; ROSIN, Ya.A., otv. red.; LANDAU-TYLKINA, S.P., red.

[Neurohumoral mechanisms in the regulation of muscular activity] Neiro-gumoral'nye mekhanizmy reguliatsii myshechnoi deiatel'nosti. Moskva, Nauka, 1965. 233 p. (MIRA 18:3)

ACCESSION NR: AT3011774 S/2949/63/000/000/0017/0040

AUTHOR: Shtern, L. S.; Gromakovskaya, M. N.; Rapoport, S. Ya.

TITLE: Neurohumoral mechanisms of radiation damage in histohematic barrier permeability

SOURCE: Gisto-gematicheskiye bar'yery* i ioniziruyushchaya radiatsiya. Sbornik rabot laboratorii fiziologii. Moscow, AN SSSR, 1963, 17-40

TOPIC TAGS: histohematic barrier permeability, ionizing radiation, isotope method, phosphorus 32 distribution, iodine 131 distribution, histamine level, sertonine level, neuroreflexive mechanism, humoral mechanism, neurotropic substance, novocaine, atropine, morphine

ABSTRACT: Permeability changes in histohematic barriers after irradiation were studied in white rats by the isotope method. Animals X-irradiated with 800 r doses (31.4 r/min) were injected with radioactive phosphorus (P 32) or iodine (I-131). Tissue radioactivity of the animals killed at different periods was determined by an AS-2 aluminum counter for phosphorus and by an end

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ACCESSION NR: AT3011774

counter for iodine. The role of neuroreflexive mechanisms was studied by screening various parts of the body during irradiation and by investigating the effects of novocaine, atropine, and morphine. Free histamine and free sertonine levels in the organism were also studied to determine the role of humoral mechanisms in early radiation damage of histohematic barriers. Both radioactive phosphorus and iodine indicate that histohematic barrier permeability changes are a part of early radiation damage. The various neurotropic substances (novocaine, atropine, and morphine) administered before or after radiation remove or considerably reduce permeability changes. Screening parts of the body when applying local anaesthesia to the abdominal region also sharply reduces histohematic barrier permeability changes. Apparently these changes are neuroreflexive in nature and are related to changes in afferent nerve pulsation from the abdominal organs. Histohematic barrier permeability changes in early radiation damage can be averted by changing the free histamine level with antihistamines and by changing the sertonine level with reserpine. Neurohumoral factors are important in determining histohematic barrier permeability levels under normal physiological conditions and in determining permeability changes in early

Card 2/3

ACCESSION NR: AT3011774

radiation damage. Orig. art. has: 15 tables.

ASSOCIATION: Laboratoriya fiziologii. Moscow. AN SSSR. (Physiology Laboratory, AN SSSR)

SUBMITTED: 00 DATE ACQ: 07Oct63 ENCL: 00

SUB CODE: AM NO REF SOV: 041 OTHER: 053

Card 3/3

GROMAKOVSKIY, I. K., Cand. Agri. Sci. (diss) "Effect of Pinching Tops, Beading, and Breaking Off Shoots of Vines on Yield of Wine Grapes," Kishinev, 1961, 22 pp. (Odessa Agri. Inst.) 250 copies (KL Supp 12-61, 279).

GROMAKOVSKIY, K.F., agronom.

System of management on collective farms. Zemledelie 4 no.10:74-80 O '56. (MLRA 9:11)

(Collective farms) (Agriculture)

GROMAKOVSKIY, K.F. (Volgodonsk, Rostovskoy obl.)

Economic use of chemical industry waste. Zashch.rast.ot vred.i bol. 7 no.6:20 Je '62. (MIRA 15:12)
(Rostov Province—Herbicides)

GROMAKOVSKIY, K.F.

Use of synthetic fatty acids in agriculture. Masl.-zhir.prom. 29 no.1:38-39 Ja '63. (MIRA 16:2)

1. Agrokhimicheskaya laboratoriya Uprvinproma Rostovskoy oblasti. (Agricultural chemical) (Acids, Fatty)

GROMAKOVSKIY, P.I., dotsent; GRINYK, M.A., assistent; SAZONOV, V.N., assistent.

The preparation bios in veterinary practice. Veterinariia 33 no.7: 74-77 Jl '56. (MLRA 9:9)

1.Veterinarnyy fakul'tet Odesskogo sel'skokhozyzystvennogo instituta. (Vitamins--B) (Veterinary medicine)

ZHERDEV, A.P.; GROMAKOVSKIY, V.P.

Reinforced concrete chutes and other nonmetallic equipment at coal preparation plants of the Stalino Economic Council. Koks i khim. no.7:55-56 Jl '61. (MIRA 14:9)

1. Stalinskiy sovnarkhoz (for Zherdev). 2. Novo-Uzlovskaya ugleobogatitel'naya fabrika (for Gromakovskiy).
(Stalino Province—Coal preparation plants--Equipment and supplies)

S/109/60/005/008/023/024
E192/E382

9.3120 (1043,1137,1140)

AUTHORS: Sirotenko, I.G., Spivak, G.V. and Groman, A.

TITLE: Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol. 5, No. 8, pp. 1348 - 1350

TEXT: The work reported deals with the manufacture of semiconductor whiskers and measurement of their field emission It appears that the data relating to the field emission of such monocrystals are lacking (Refs. 7, 8). The whiskers of tungsten and molybdenum oxides obtained by the authors are larger than the usual micro-whiskers. The whiskers are produced by the following technique. A small quantity of tungsten or molybdenum oxide was placed in a quartz tube having a length of 15 cm and a diameter of 6 mm; the tube being closed at one end. The oxides were obtained by burning fine wires in an oxygen atmosphere. By heating the lower end of the tube in air a sublimation of the oxides was achieved and the vapours condensed on the comparatively cold portions

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S/109/60/005/008/023/024
E192/E382

Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

of the tube (see Fig. 1). A growth of whiskers occurred at various areas of the tube, depending on the concentration of the vapours and the temperature gradients. At very high vapour concentrations the whiskers were in the form of dendrites. In order to obtain the whiskers in a suitable form, a metal loop was introduced into the quartz tube and the whiskers were grown on it (Fig. 1). After that the wire loop was suitably mounted in a gun and investigated. In the case of molybdenum oxide, the whiskers were also obtained by the following method: a spiral having a diameter of 5 mm and a length of 5 cm was made of molybdenum wire and one of its ends was bent in the shape of a loop; this was then placed inside the spiral so that the end of the loop was roughly in the centre of the spiral. When the end of the spiral was heated by an oxygen flame the molybdenum was oxidised and the resulting oxide vapours were condensed on the loop in the form of whiskers. The whiskers were investigated

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S/109/60/005/008/023/024
E192/E382

Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

in a micro-projector tube which was evacuated by means of a fore-vacuum and an oil-diffusion pump. It was found that at pressures of 10^{-6} - 10^{-7} mm Hg and voltages of 6-9 kV the emission of the whiskers was unstable but in a vacuum of 10^{-8} mm Hg the stability was satisfactory and the current was of the order of 10-30 μA. The authors express their gratitude to N.V. Kovaleva for help in the measurement of field emission. There are 5 figures and 9 references: 3 Soviet and 6 non-Soviet.

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S/109/60/005/008/023/024
E192/E382

Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

Fig. 1:

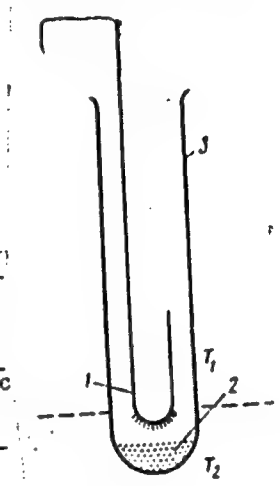

Рис. 1. Рост вискерсов окиси W на проволочной петле:

1 — W-проволока; 2 — окись W; 3 — кварцевая трубка; T — комнатная температура; T_2 — 1000°C для окиси W и — 700° C для окиси Mo

Card 4/4

SUBMITTED: December 21, 1959

GROMAN, M.B.

Reviews and bibliography. Vest.mashinostr. 45 no.8:85-90 Ag '65. (MIRA 18:12)

USSR/Miscellaneous - Book review

Card 1/1 : Pub. 128 - 35/38

Authors : Groman, M. B., and Shneyderovich, R. M.

Title : Book review

Periodical : Vest. mash. 9, 103-106, Sep 1954

Abstract : A critical review is presented of D. I. Berenov's book, "The Stress Analysis of Machines," published by "Mashgiz" in 1953.

Institution : .....

Submitted : .....

AL'SHITS, I.Ya., kandidat tekhnicheskikh nauk; BABKIN, S.I., kandidat tekhnicheskikh nauk; BALAKSHIN, B.S., doktor tekhnicheskikh nauk, professor; BEYSEL'MAN, R.D., inzhener; BELYAYEV, V.H., kandidat tekhnicheskikh nauk; BEREZINA, N.I., inzhener; BIRGER, I.A., doktor tekhnicheskikh nauk; BOGUSLAVSKIY, Yu.M., kandidat tekhnicheskikh nauk; BOROVICH, L.S., kandidat tekhnicheskikh nauk; GONIKBERG, Yu.M., inzhener; GORDON, V.O., professor; GORODETSKIY, I. Ye., doktor tekhnicheskikh nauk, professor; GROMAN, M.B., inzhener; DIKER, Ya.I., kandidat tekhnicheskikh nauk; DOSCHATOV, V.V., inzhener; IVANOV, A.G., kandidat tekhnicheskikh nauk; KINASOSHVILI, R.S., doktor tekhnicheskikh nauk, professor; KRUTIKOV, I.P., kandidat tekhnicheskikh nauk; LEVENSON, Ye.M., inzhener; MAZYRIN, I.V. inzhener; MARTYNOV, A.D., kandidat tekhnicheskikh nauk; NIBERG, N.Ya., kandidat tekhnicheskikh nauk; NIKOLAYEV, G.A., doktor tekhnicheskikh nauk, professor; PETRUSEVICH, A.I., doktor tekhnicheskikh nauk; POZDNYAKOV, S.N., dotsent; PONOMAREV, S.D., doktor tekhnicheskikh nauk, professor; PRONIN, B.A. kandidat tekhnicheskikh nauk; RESHETOV, D.N., doktor tekhnicheskikh nauk, professor; SATEL', E.A., doktor tekhnicheskikh nauk, professor; SIMAKOV, F.F., kandidat tekhnicheskikh nauk; SLOBODKIN, M.S., inzhener; SPITSYN, N.A., doktor tekhnicheskikh nauk, professor; STOLBIN, G.B., kandidat tekhnicheskikh nauk; TAYTS, B.A., doktor tekhnicheskikh nauk; CHERNYSHEV, H.A., kandidat tekhnicheskikh nauk; SHNEYDEROVICH, R.M., kandidat tekhni-

(Continued on next card)

AL'SHITS, I.Ya., kandidat tekhnicheskikh nauk (and others)..... Card 2.

cheskikh nauk, EYDINOV, V.Ya., kandidat tekhnicheskikh nauk; ERLIKH, L.B., kandidat tekhnicheskikh nauk; ACHERKAN, N.S., doktor tekhnicheskikh nauk, professor, redaktor; MARKUS, M.Ye., inzhener, redaktor; KARGANOV, V.G., inzhener, redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor.

[Mechanical engineer's manual; in 6 volumes] Spravochnik mashinostroitelia; v shesti tomakh. Izd.2-e, ispr. i dop. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, Vol.4, 1955. 851 p. (MLRA 8:12)
(Mechanical engineering)

GROMAN, M.B.

USSR/ Engineering - Gear transmissions

Card 1/1 Pub. 128 - 1/23

Authors : Groman, M. B.

Title : The selection of correction factors for gear transmissions

Periodical : Vest. mash. 2, 3 - 13, Feb 1955

Abstract : Methods for regrinding and the selection of correction factors for bevel and spur gear transmissions are discussed, and formulas are presented for calculating gear meshing, pitch and gear modules. Eight USSR references (1946 - 1955). Graphs; drawings

Institution: .....

Submitted: .....

Groman, M. B.

USSR/ Engineering - Stress and strain calculations

Card 1/1 Pub. 128 - 5/28

Authors : Petrusevich, A. I., and Groman, M. B.

Title : An approximate method for calculating the strength of gear transmissions

Periodical : Vest. mash. 35/6, 23 - 29, Jun 1955

Abstract : The use of an approximate method for calculating the strength of gear transmissions in cases where the dimensions and weight of gears exceed the minimum allowable tolerances, is discussed. The calculation of permissible loads on gear trains, selection of proper materials and heat treating methods, and the required dimension of gears, with the aid of the above mentioned method, is described. Three USSR references (1951-1955). Drawings; diagrams; tables.

Institution : .....

Submitted : .....

GROMAN, M.R.

"Module limitations" in correcting gears cut by worm hobbing machines. Vest.mash. 36 no.7:15-21 Jl '56. (MLRA 9:9)
(Gearing, Worm)

GROMAN, M.B.

KUDRYAVTSEV, Vladimir Nikolayevich, prof., d-r tekhn.nauk; GROMAN, M.B., inzh., retsenzent; MARKOV, V.G., kand.tekhn.nauk, red.; SIMONOVSKIY, N.Z., red.izd-va; SOKOLOVA, L.V., tekhn.red.

[Gearing] Zubchatye peredachi. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 262 p. (MIRA 11:1)
(Gearing)

BEYLINA, TS.O., inzhener; BLAGONADEZHDIN, V.Ye., inzhener; BOGUSLAVSKIY, P.Ye., kandidat tekhnicheskikh nauk; VORONKOV, I.M., professor, GITINA, L.Ya., inzhener; GROMAN, M.B., inzhener; GOROKHOV, N.V., doktor tekhnicheskikh nauk [deceased]; DENISYUK, I.N., kandidat tekhnicheskikh nauk; DOVZHIK, S.A., kandidat tekhnicheskikh nauk; DUKEL'SKIY, M.P., professor, doktor khimicheskikh nauk [deceased]; DYKHOVICHNYY, A.I., professor; ZHITKOV, D.G., professor, doktor tekhnicheskikh nauk; KOZLOVSKIY, N.S., inzhener; LAKHTIN, Yu.M., doktor tekhnicheskikh nauk; LEVENSON, L.B., professor, doktor tekhnicheskikh nauk [deceased]; LEVIN, B.Z., inzhener; LIPKAN, V.F., inzhener; MARTYNOV, M.V., kandidat tekhnicheskikh nauk; MOLEVA, T.I., inzhener; NOVIKOV, F.S., kandidat tekhnicheskikh nauk; OSETSKIY, V.M., kandidat tekhnicheskikh nauk; OSTROUMOV, G.A.; PONOMARENKO, Yu.F., kandidat tekhnicheskikh nauk; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk; REGIRER, Z.L., inzhener; SOKOLOV, A.N., inzhener; SOSUNOV, G.I., kandidat tekhnicheskikh nauk; STEPANOV, V.N., professor; SHEMAKHANOV, M.M., kandidat tekhnicheskikh nauk; EL'KIND, I.A., inzhener; YANUSHEVICH, L.V., kandidat tekhnicheskikh nauk; BOKSHITSKIY, Ya.M., inzhener, redaktor; BULATOV, S.B., inzhener, redaktor; GASHINSKIY, A.G., inzhener, redaktor; GRIGRO'YEV, V.S., inzhener, redaktor; YEGURNOV, G.P., kandidat tekhnicheskikh nauk, redaktor; ZHARKOV, D.V., dotsent, redaktor; ZAKHAROV, Yu.G., kandidat tekhnicheskikh nauk, redaktor; KAMINSKIY, V.S., kandidat tekhnicheskikh nauk, redaktor; KOMARKOV, Ye.F., professor, redaktor; KOSTYLEV, B.N., inzhener, redaktor; POVAROV, L.S., kandidat tekhnicheskikh nauk, redaktor; ULINICH, F.R., redaktor; KLORIK'YAN, S.Kh., otvetstvennyy redaktor; GLADILIN, L.V., redaktor;

(Continued on next card)

HEYLINA, TS.O. --- (continued) Card 2.
RUPPENEYT, K.V., redaktor; TERPIGOREV, A.M., glavnyy redaktor; BARABANOV, F.A., redaktor; BARANOV, A.I., redaktor; BUCHNEV, V.K., redaktor; GRAFOV, L.Ye., redaktor; DOKUKIN, A.V., redaktor; ZADEMIDKO, A.N., redaktor; ZASYAD'KO, A.F., redaktor; KRASNIKOVSKIY, G.V. redaktor; LETOV, N.A., redaktor; DISHIN, G.L., redaktor; MAN'KOVSKIY, G.I., redaktor; MEL'NIKOV, N.V., redaktor; ONIKA, D.G., redaktor; OSTROVSKIY, S.B., redaktor; POKROVSKIY, N.N., redaktor; POLSTYANOY, G.N., redaktor; SKOCHINSKIY, A.A., redaktor; SONIN, S.D., redaktor; SPIVAKOVSKIY, A.O., redaktor; STANCHENKO, I.K., redaktor; SUDOPLATOV, A.P., redaktor; TOPCHIYEV, A.V., redaktor; TROYANSKIY, S.V., redaktor; SHEVYAKOV, L.D., redaktor; BYKHOVSKAYA, S.N., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhnicheskiy redaktor; PROZOROVSKAYA, V.L., tekhnicheskiy redaktor.

[Mining; an encuclopedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav.red. A.M. Terpigorev. Chleny glav.red. F.A. Barabanov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po ugol'noi promysh]. Vol.1. [General engineering] Obshchie inzhenernye svedeniia. Redkollegiia toma S.Kh.Klorik'ian i dr. 1957. 760 p.
(Mining engineering) (MLRA 10:10)